

Landscape Lighting

Occasionally, questions come in regarding the use of security or landscape lighting. People are concerned about the effects this lighting may have on plants in the landscape. To understand how these types of lighting may affect the plant, we need to understand how plants use light. Light influences plant growth through quality (wavelength or color of the light spectrum), intensity (irradiance) and lighting duration. Light visible to the naked eye occurs in the wavelengths from 380 to 760 nanometers (nm). The wavelength of 380 nm is visible to us as violet. The wavelength of 760 nm is visible to us as red. Wavelengths in between are seen as the colors of the rainbow, the light spectrum.

Light controls many plant processes. For example, light in the 400-450 nm (blue) and 625-700 nm (red) wavelengths is required for photosynthesis. Photoperiod responses occur in the red wavelengths. Phototropic (growth of plants toward the light source) responses occur in the blue wavelengths. Plants are grouped into three areas based on photoperiod responses; short-day, long-day and day-neutral. Short-day plants initiate flower buds when days are shorter than a critical point. A more appropriate name may be long-night plant. Long-day plants continue in a vegetative state until day length is longer than a critical point. A more appropriate name for this group of plants may be short-night plant. Flowering for day-neutral plants is not controlled by photoperiod. When given light for 24 hours, short-day plants continue to grow vegetatively and flowering is inhibited. Long-day plants are induced to flower earlier and continue to put on vegetative growth. Day-neutral plants continue to grow vegetatively. A concern with landscape lighting is that plants will continue vegetative growth late in the season. This late growth will not have the opportunity to harden off properly before winter and

may experience severe winter injury.

The most common types of lighting include incandescent, high-pressure sodium, metal halide and mercury vapor. A study by Cathey and Campbell, published in the mid-70s, compared five light sources and their effects on promoting vegetative growth of woody plants, delaying flowering of short-day plants and promoting flowering of long-day plants. Sources were ranked from most effective (those able to promote vegetative growth) to least effective. Incandescent > High Pressure Sodium > Metal Halide = Cool White Fluorescent > Clear Mercury. Thus, for landscape lighting we would want to avoid those lights (like incandescent) that promote vegetative growth.

Incandescent lights produce all wavelengths of light and are closest to natural sunlight. Incandescent is the least expensive light source to purchase, but the most expensive to operate because of short lamp



life and low efficiency. Oddly enough, it still remains the most popular type of lighting for residential landscapes. Metal halide is more efficient to operate and has wavelengths in the blue-green-red area. It has better color emission than mercury, but not quite as good as incandescent. Mercury vapor lamps emit light in the blue-green range which accentuates the green color of plants. High-pressure sodium lights are highly efficient. They emit more yellow and red wavelengths which doesn't do much for the color of anything. They are best used strictly for security lighting rather than enhancement of a landscape feature. Fluorescent lights are seldom used for landscape lighting.

The important thing to remember is that light isn't the

only factor involved in plant growth. Temperature, water, fertilization and soil type can also influence plant growth. Light given off by street and landscape lighting, in most cases, is not intense enough to affect plant growth.

Some things can be done to avoid possible problems with landscape lighting. Select the proper light for the area. For security purposes, high-pressure sodium lights are the best choice. Metal halide would be preferred over incandescent in residential areas, malls, parks, etc., where true color is important. Lights that may affect plant growth can be shielded to direct light away from plants. Select plants tolerant of security lighting. Many plants, long-day and day-neutral species, are better adapted to these locations.

Suggested Plants

A brief list of suggested plant species for security-lighted areas includes:

- Carpinus japonica
- Ginkgo biloba
- Malus sargentii
- Pyrus calleryana
- Quercus palustris
- Tilia cordata
- Phellodendron amurense
- Ostrya virginiana
- Gleditsia triacanthos
- Cercis canadensis
- Hornbeam
- Ginkgo
- Sargent's crabapple
- Bradford pear
- Pin oak
- Littleleaf linden
- Amur corkscrew
- Honeylocust
- Redbud

Plants to Avoid

Plants sensitive to security lighting include:

- Acer ginnala
- Acer platanoides
- Catalpa bignonioides
- Cornus sericea
- Amur maple
- Norway maple
- Catalpa
- Red-osier dogwood

These are not all inclusive plant lists. Unfortunately, there hasn't been any published data in the area of plants and light sensitivity since the mid-70s. With more and more homeowners installing landscape lighting, it is definitely an area of growing interest. (DJ)

Urban Agriculture



Excess Solids May Harm Septic Systems

A septic system will need frequent pumping if large amounts of solid material accumulate in the wastewater.

Solids in wastewater separate in the tank. Heavier solids settle to the bottom and form sludge; lighter solids float to the top and form scum. Scum and sludge can build up and be carried to the drainfield. This can clog the drainfield and wastewater won't be treated properly. To reduce solids, follow these tips:

- Don't flush away cigarettes, diapers, feminine hygiene products, paper towels and tissues down the toilet. When flushed, those products decompose slowly and contribute to the scum and sludge layers.
- Don't overuse the garbage disposal. Ground food products settle in the tank and add to buildup.
- Grease and oils add to the scum layer, so avoid putting cooking and frying oils or skin lotions down the drain.
- Use liquid detergents instead of powdered detergents, which contain material that adds to the sludge layer.

- Make sure your toilet tissue breaks down quickly. To test the paper's strength, place it in a jar of water, put the lid on and shake the jar. The paper should fall apart quickly.
- Put a filter on the washing machine's water discharge line. The filter will trap lint and prevent it from clogging the drainfield. Clean the filter often.
- To prevent solids from moving into the drainfield, install an effluent filter on the septic tank's outlet.

Septic systems shouldn't be used to treat hazardous materials. Don't dump these products down the drain: pesticides and chemicals; paints, thinners and solvents; medications and excess bleach or cleaning products. Avoid using toilet cleaning dispensers that release bleach with every flush because they may reduce the bacteria that decompose waste in the septic tank. (DJ)

SOURCE: Community and Residential Environment Team Water and Waste Group, Sharon Skipton, Wayne Woldt and Jan Hygnstrom, NU/LANR

Pruning Overgrown Lilacs

The common purple lilac is a tough, reliable shrub that may reach a height of 15 to 20 feet. Unfortunately, as lilacs mature, the shaded lower portions of the shrubs usually lose their leaves. As a result, large, overgrown specimens are often leggy and unattractive. Old, neglected lilacs can be renewed or rejuvenated by pruning. Home gardeners can choose between two different pruning methods.

One way to renew a large, overgrown lilac is to cut the entire plant back to within six to eight inches of the ground in late winter (March or early April). This severe pruning will induce a large number of shoots to develop during the growing season. In late winter of the following year, select and retain several strong, healthy shoots to form the shrub framework and remove all the others at ground level. Head (cut) back the retained shoots to just above a bud to encourage branching.

A second way to prune old lilacs is to cut back the over-

grown shrubs over a three-year period. Begin the procedure by removing one-third of the large, old stems at ground level in late winter. The following year (again in late winter), prune out one-half of the remaining old stems. Also, thin out some of the new growth. Retain several well-spaced, vigorous stems and remove all the others. Finally, remove all of the remaining old wood in late winter of the third year. Additional thinning of the new shoots should also be done. Since lilac wood needs to be three or more years of age before it blooms, this pruning method should allow you to enjoy flowers every spring.

When properly pruned, an old, overgrown lilac can be transformed into a vigorous attractive shrub within a few years. Once rejuvenated, pruning should be a regular part of the maintenance program for lilacs. The shrub can be kept healthy and vigorous by removing a few of the oldest branches every three to five years. (DJ)

Working with the Right Tools for Pruning

Late winter or early spring is an excellent time to prune many trees and shrubs. The keys to pruning are a basic understanding of pruning techniques and the use of proper tools. There are various types of pruning tools. The size of the plant material determines the best tool

for the job.

Pruning or hand shears are generally used for cutting stems (branches) up to 3/4 inch in diameter. There are two basic types of pruning shears. The scissor-type shears has curved blades that overlap (scissor action) when making the cut.

The anvil-type shears has a sharp top blade that cuts against a flat surface (anvil). Each type is available in different sizes. Generally, the scissor-type shears is recommended rather than the anvil-type shears. A sharp, properly used scissor-type shears can make closer

cuts and is less likely to crush stem tissue than anvil-type shears.

Hand shears are not very successful in pruning stems larger than 3/4 inch in diameter. Pruning branches larger than the shears can properly cut often results in torn, jagged pruning

cuts and may damage the pruning shears. Branches from 3/4 to 1 3/4 inches in diameter can be effectively cut with a lopping shears. Lopping shears consist of blades attached to long handles. The long handles

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